

Dual occupancy in Tennyson Point

Data of building | Gebäudedaten

Year of construction Baujahr	2024	Space heating Heizwärmebedarf	12
U-value external wall U-Wert Außenwand	0.321 W/(m ² K)		kWh/(m²a)
U-value basement / floor slab U-Wert Kellerdecke	1.108 W/(m ² K)	Primary Energy Renewable (PER) Erneuerbare Primärenergie (PER)	57 kWh/(m ² a)
U-value roof U-Wert Dach	0.310 W/(m ² K)	Generation of renewable Energy Erzeugung erneuerb. Energie	76 kWh/(m ² a)
U-value window U-Wert Fenster	0.53 W/(m ² K)	Non-renewable Primary Energy (PE) Nicht erneuerbare Primärenergie (PE)	110.4 kWh/(m ² a)
Heat recovery Wärmerückgewinnung	79 %	Pressurization test n ₅₀ Drucktest n ₅₀	0.5 h ⁻¹
Special features Besonderheiten			

Brief Description

This project is a newly completed (2024) knockdown rebuild in Tennyson Point, featuring a dual occupancy development Certified Passive Houses Plus.

Kurzbeschreibung der Bauaufgabe

Dieses Projekt ist ein kürzlich fertiggestellter (2024) Abriss und Neubau in Tennyson Point und umfasst ein als Passivhaus Plus zertifiziertes Doppelhaus-Projekt.

Responsible project participants Verantwortliche Projektbeteiligte

Architect Entwurfsverfasser	EMK Architects Pty Ltd https://www.emkarchitects.com/
Implementation planning Ausführungsplanung	Qanvas Pty Ltd https://www.qanvas.com.au/
Building systems Haustechnik	Qanvas Pty Ltd https://www.qanvas.com.au/
Structural engineering Baustatik	-
Building physics Bauphysik	Qanvas Pty Ltd https://www.qanvas.com.au/
Passive House project planning Passivhaus-Projektierung	Qanvas Pty Ltd https://www.qanvas.com.au/
Construction management Bauleitung	Globuild Pty Ltd

Certifying body Zertifizierungsstelle

Passivhaus Institut Darmstadt
www.passiv.de

Certification ID Zertifizierungs ID

7888

Project-ID (www.passivehouse-database.org)
Projekt-ID (www.passivhausprojekte.de)

Author of project documentation Verfasser der Gebäude-Dokumentation

Qanvas Pty Ltd
www.qanvas.com.au

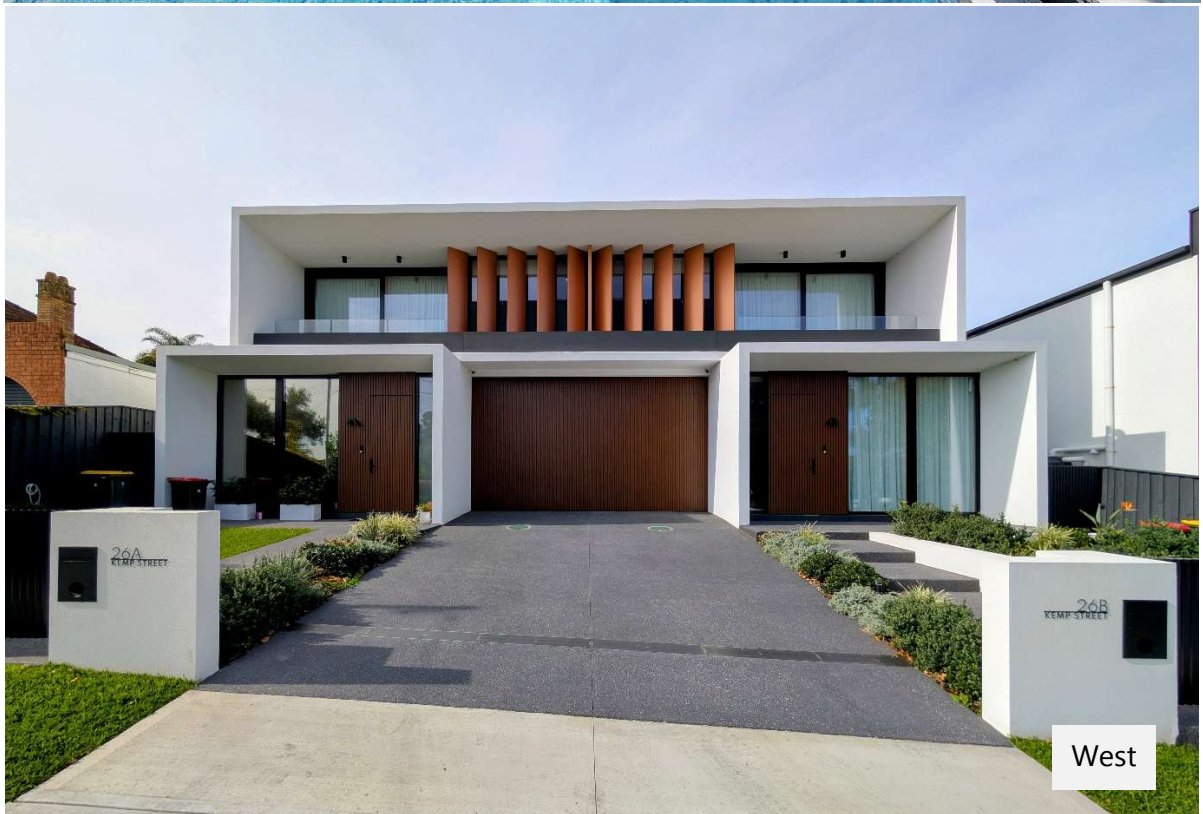
Date
Datum

05.06.2025

Signature
Unterschrift



1. Photographs

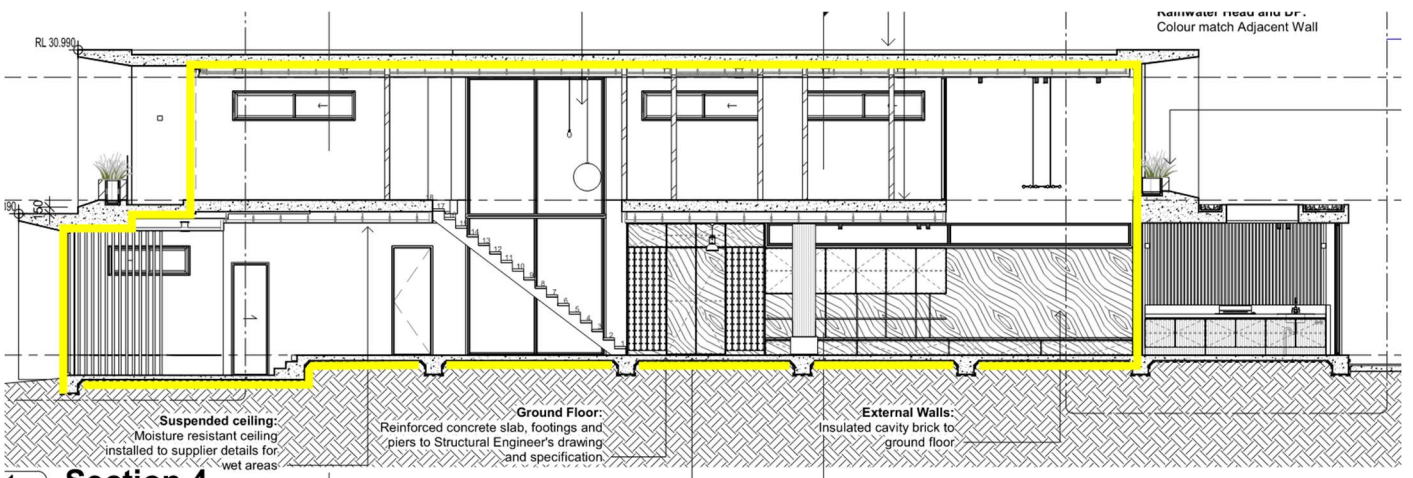
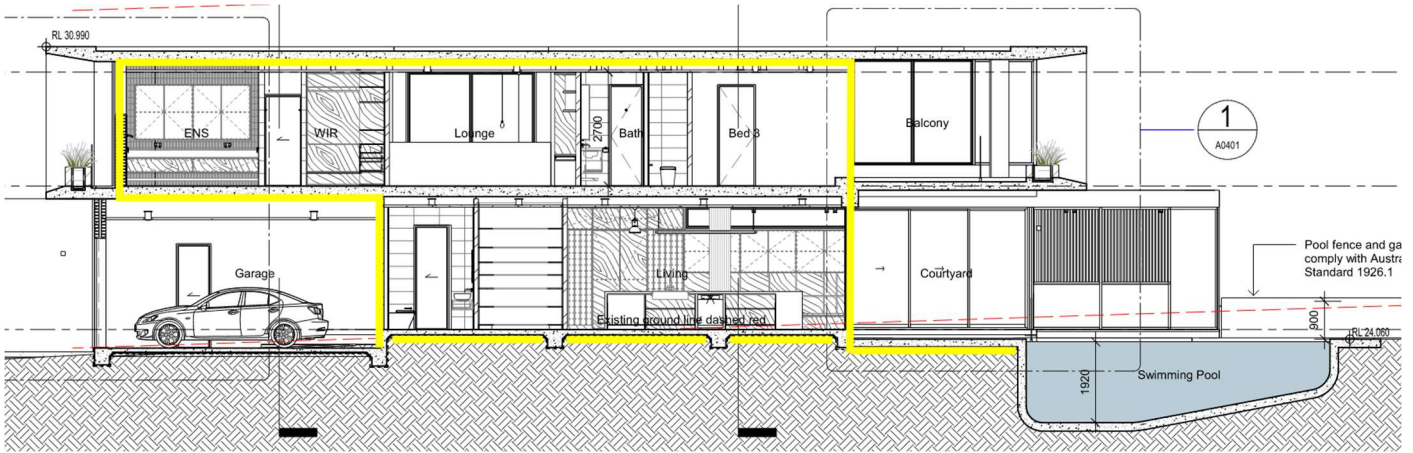


2. Interiors



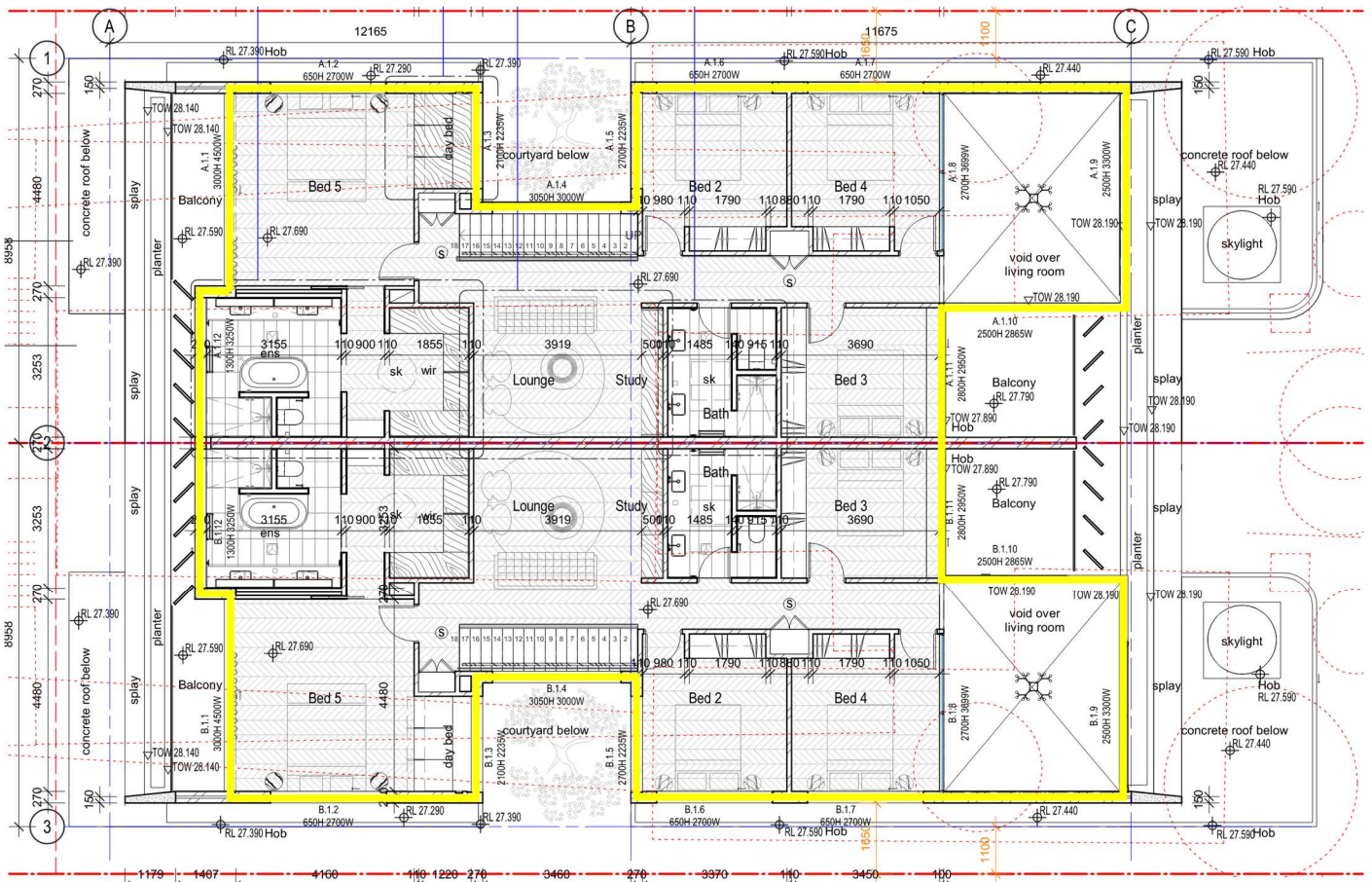
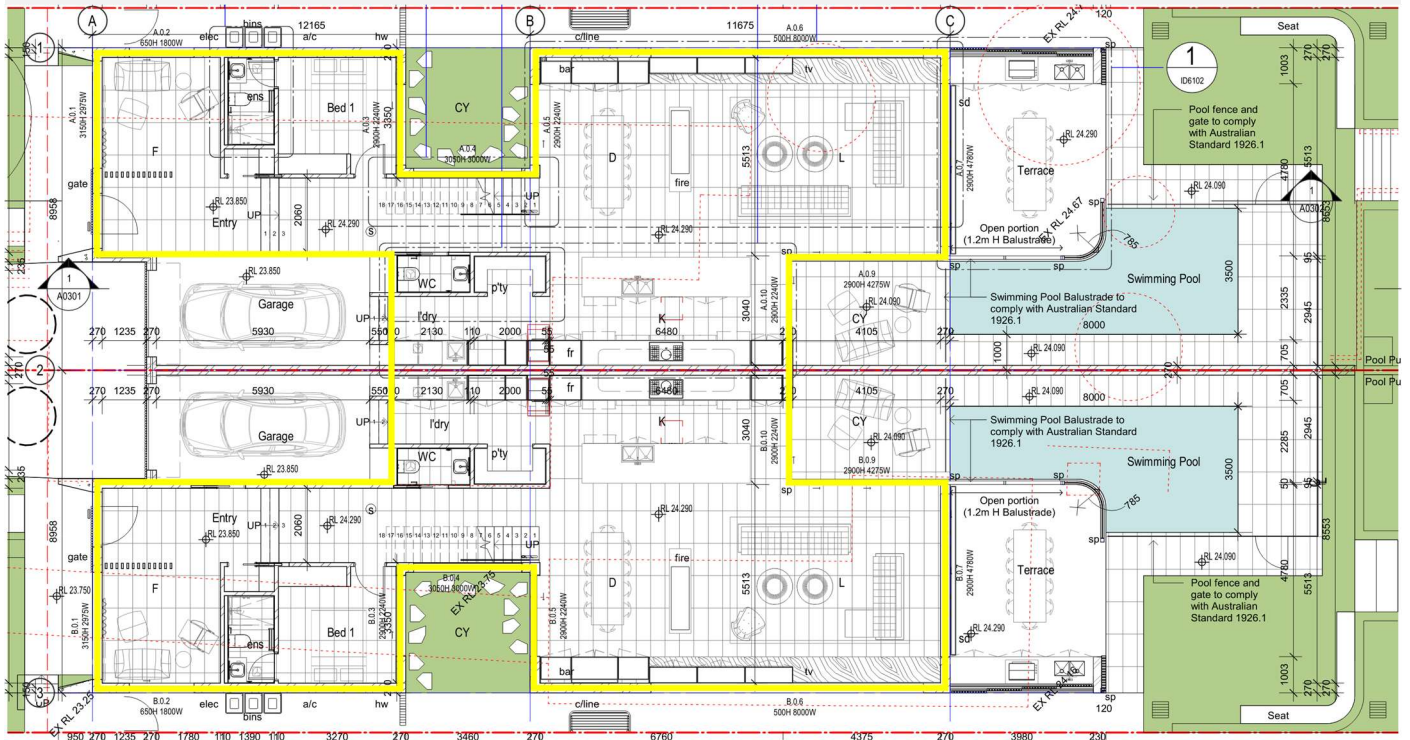


3. Sectional drawings

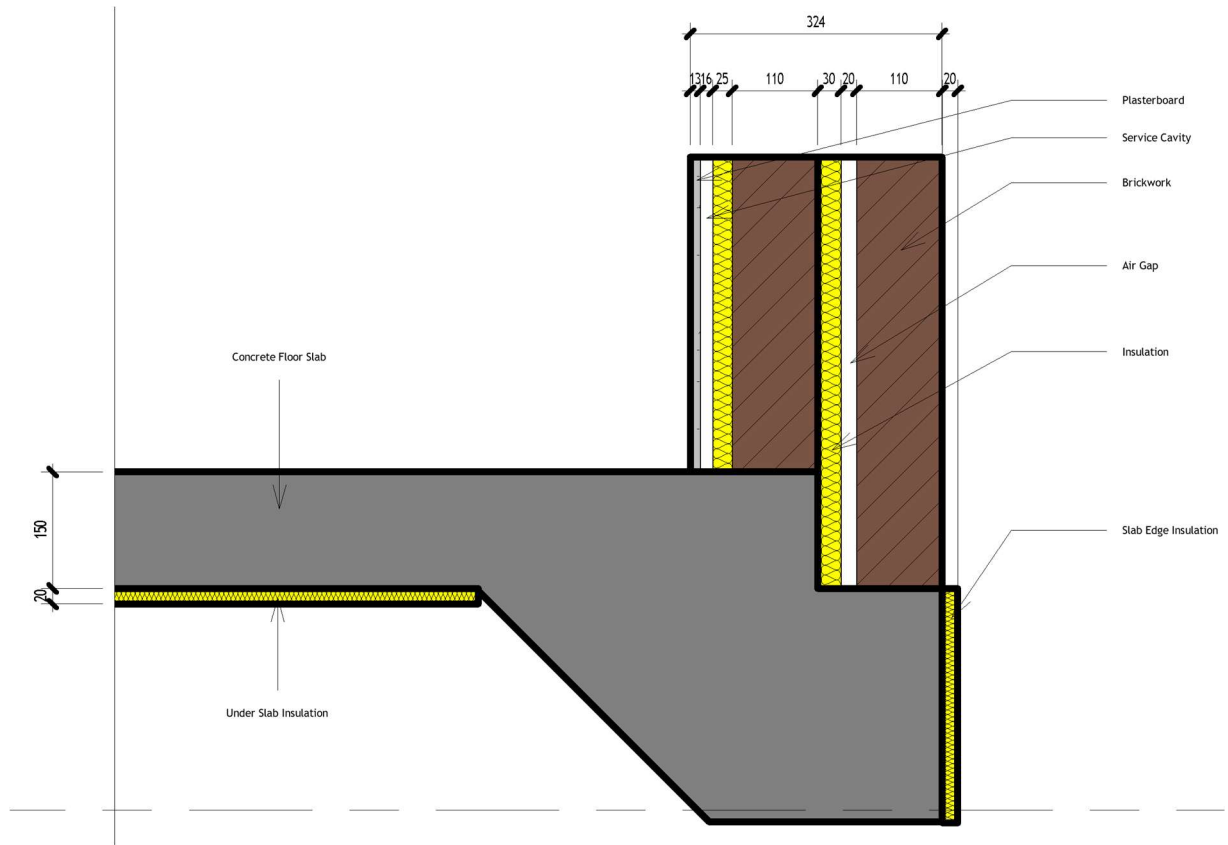


1 Section 1

4. Floor plans



5. Description of the construction of the floor slab/basement ceiling



The floor slab is insulated with a perimeter slab edge and under slab insulation throughout the building.





A combination of rigid insulations and Novomur Schöck was to minimize thermal bridging where needed at the external wall to floor slab junction.



Rigid insulations and Novomur Schöck were also used to minimize thermal bridge at the window to floor slab connection







Description of building assembly	Assembly no.
Tiled Floor	04ud

Orientation of building assembly (or R_{si})	3-Floor	Interior insulation?				
Adjacent to (or R_{se})	2-Ground	U-value supplement [W/(m ² K)]				
Area section 1	λ [W/(mK)]	Area section 2 (optional)	λ [W/(mK)]	Area section 3 (optional)	λ [W/(mK)]	Thickness [mm]
Polarboard 165 20mm R0.6	0.032					20
Reinforced Concrete	2.100					150
Tile bedding	1.400					30
Tile	0.840					12
Percentage of sec. 1:	100%	Percentage of sec. 2:		Percentage of sec. 3:		

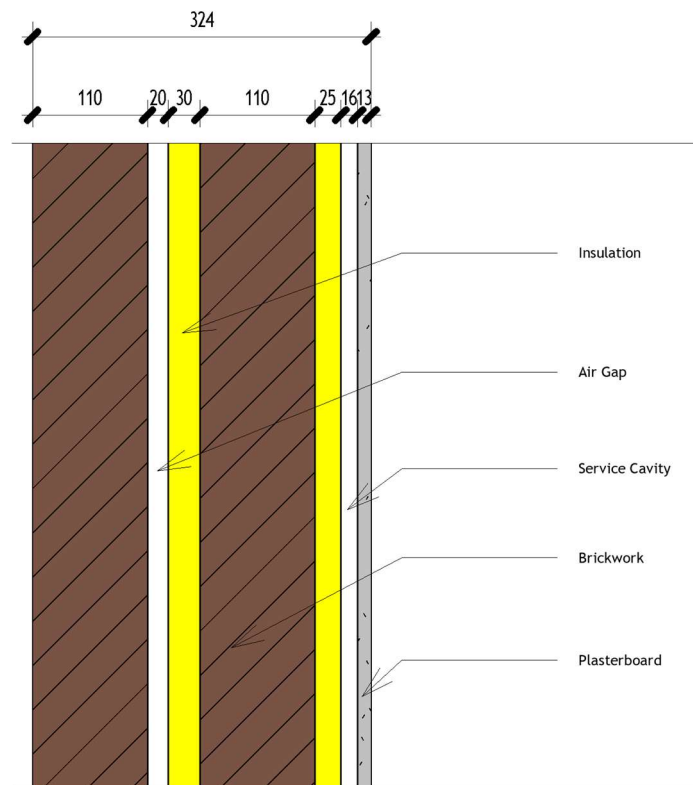
Heat transmission resistance coefficients

Interior R_{si} :	0.17	m ² K/W
Exterior R_{se} :	0.00	m ² K/W

Total thickness [cm]: **21.2**

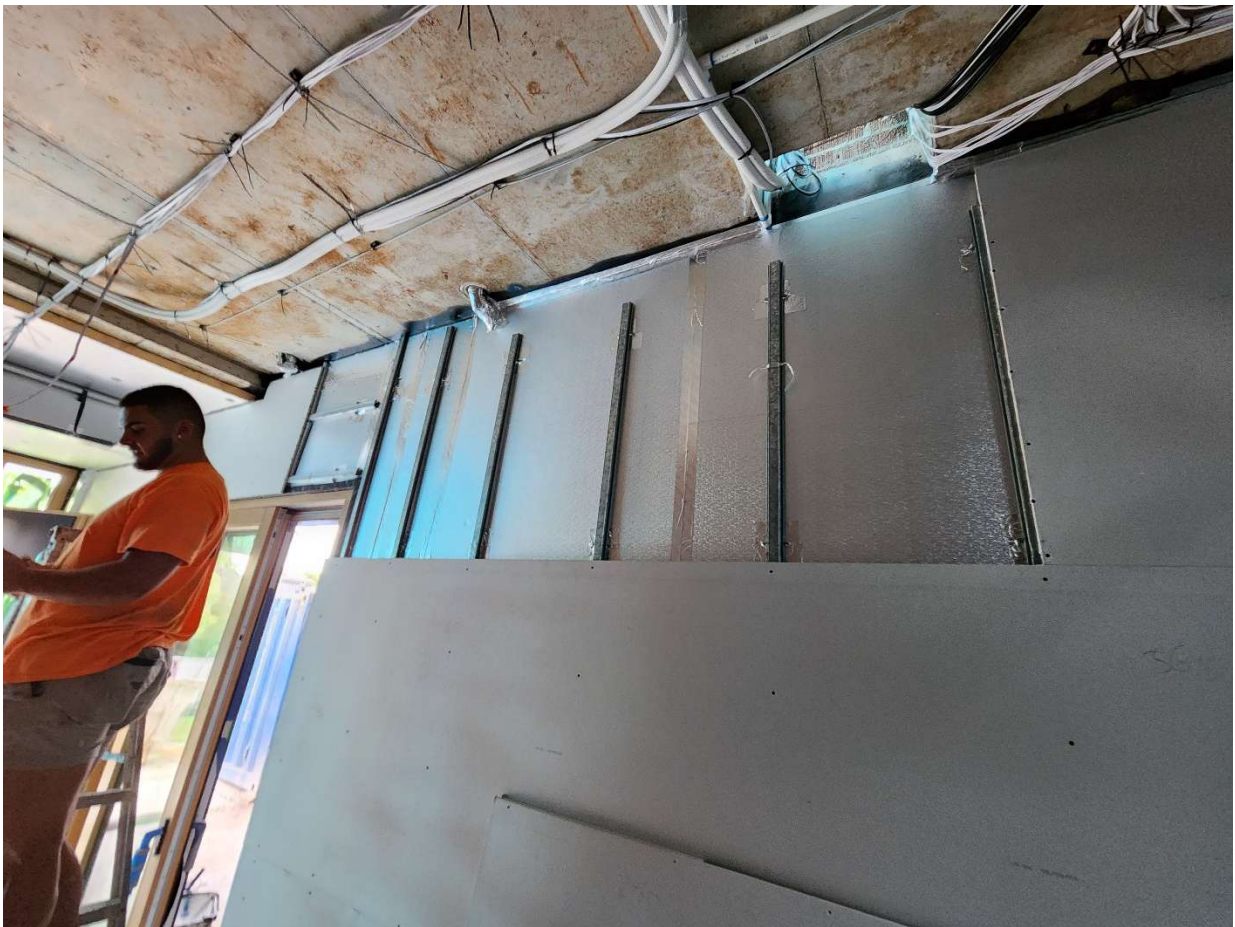
U-value [W/(m²K)]: **1.108**

6. Description of the construction of the exterior walls



The external wall is made of double brick insulated with two layers of insulation. First layer of insulation is located between the brick cavities, the second layer is attached on the internal skin and finished with plasterboard gypsum.





Description of building assembly

Assembly no.

Double Brick External Wall

01ud

Orientation of building assembly (or R_{si})		2-Wall		Interior insulation?		
Adjacent to (or R_{se})		1-Outdoor air		U-value supplement $[W/(m^2K)]$		0.007
Area section 1	λ $[W/(mK)]$	Area section 2 (optional)	λ $[W/(mK)]$	Area section 3 (optional)	λ $[W/(mK)]$	Thickness [mm]
Common Brick	0.500					110
Air gap	0.220					20
Prime Panel 30mm R1.3	0.023					30
Common Brick	0.500					110
Prime Panel 25mm R1.1	0.023					25
Service Cavity	0.180	Furring Channel	50.000			16
Plasterboard 13mm	0.250					13
Percentage of sec. 1:	93%	Percentage of sec. 2:	7.0%	Percentage of sec. 3:		

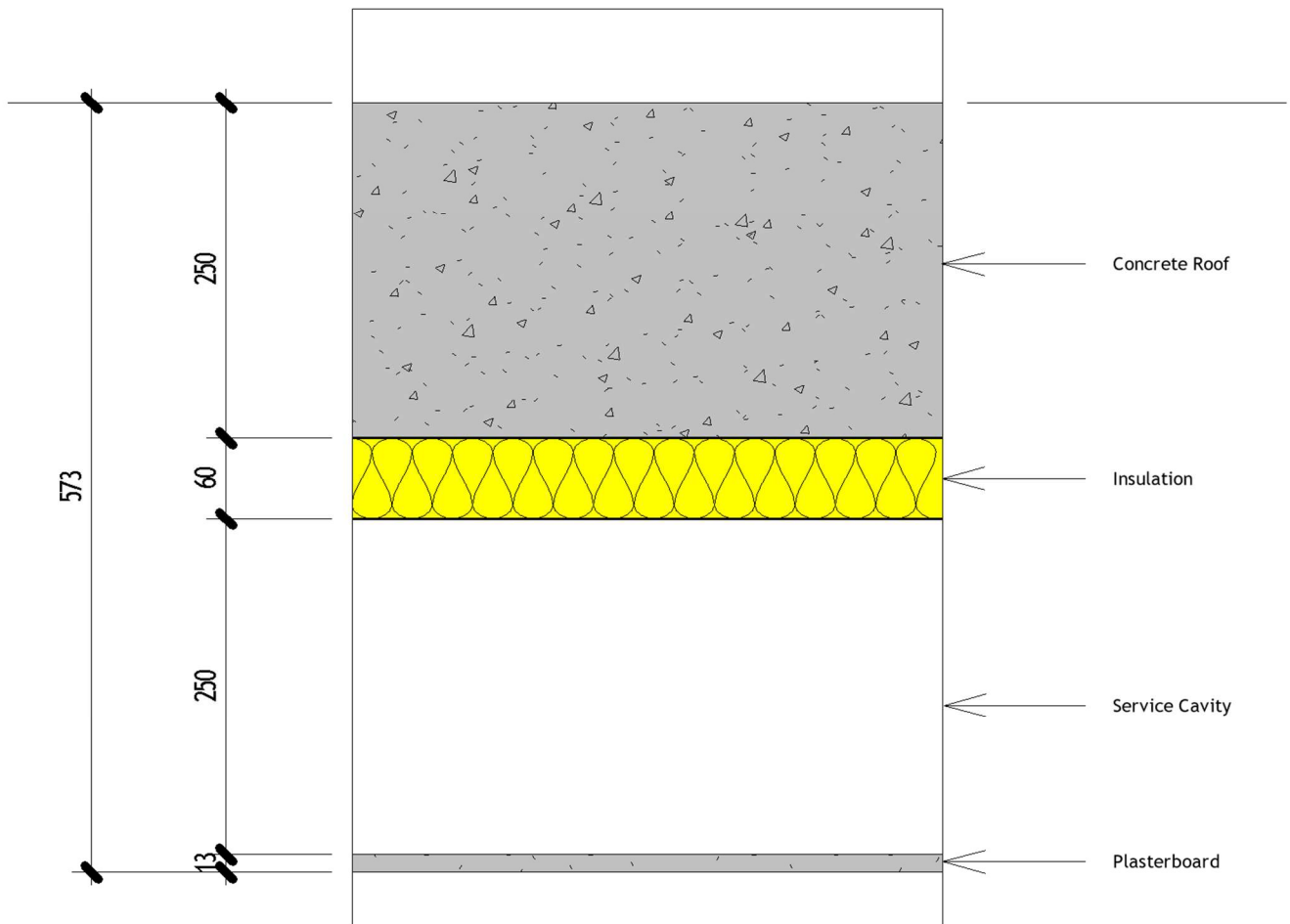
Heat transmission resistance coefficients

Interior R_{si} :	0.13	m^2K/W
Exterior R_{se} :	0.04	m^2K/W

Total thickness [cm]: 32.4

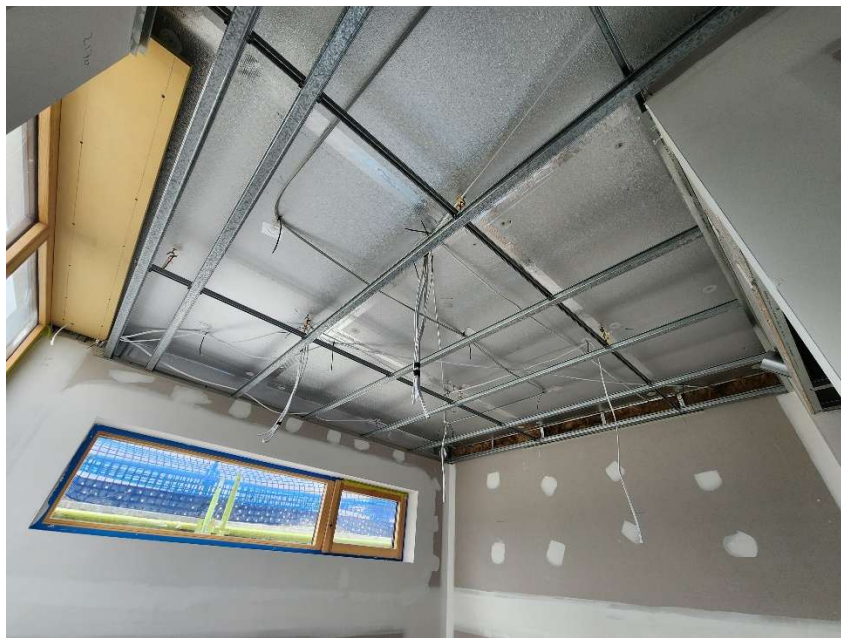
U-value $[W/(m^2K)]$: 0.321

7. Description of the construction of the roof/top floor ceiling



The roof is a flat concrete roof, insulated with a 60mm rigid insulation and finished with plasterboard gypsum.





Description of building assembly	Assembly no.
Concrete Roof	02ud

Orientation of building assembly (or R _{si})	1-Roof	Interior insulation?				
Adjacent to (or R _{se})	1-Outdoor air	U-value supplement [W/(m ² K)]	0.010			
Area section 1	λ [W/(mK)]	Area section 2 (optional)	λ [W/(mK)]	Area section 3 (optional)	λ [W/(mK)]	Thickness [mm]
Reinforced Concrete	2.100					250
Prime Panel 60mm R2.85	0.021					60
Service Cavity	2.280					210
Service Cavity	0.440	Furring Channel	50.000			40
Plasterboard 13mm	0.250					13
Percentage of sec. 1:	93%	Percentage of sec. 2:	7.0%	Percentage of sec. 3:		

Heat transmission resistance coefficients

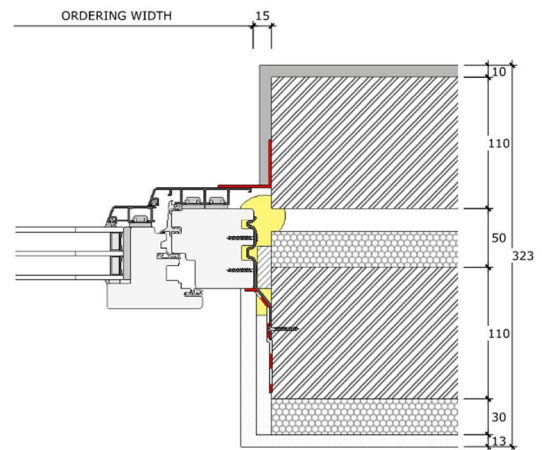
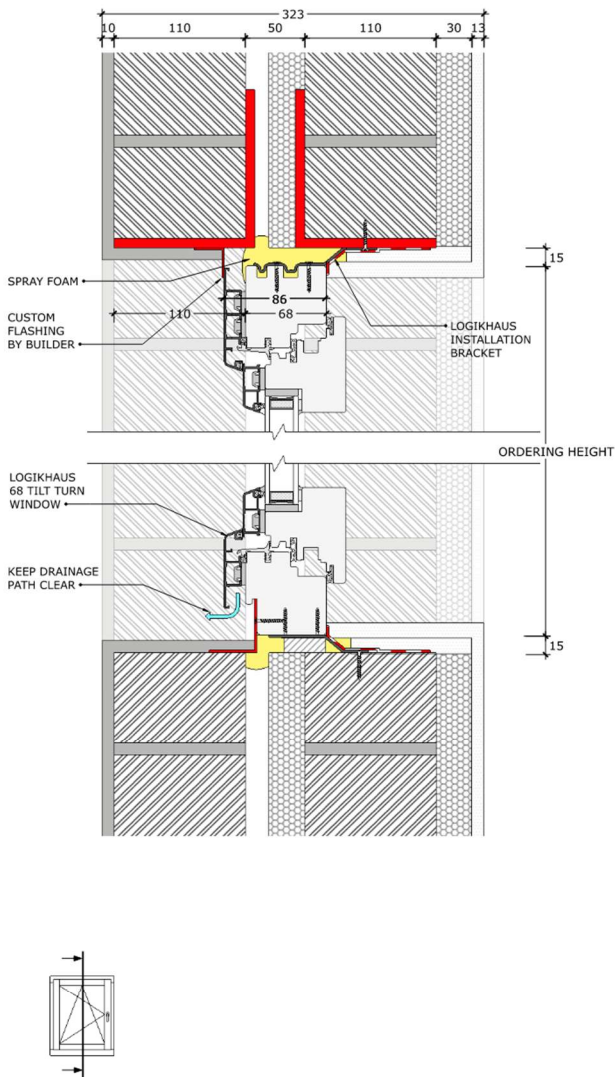
Interior R _{si} :	0.13	m ² K/W
Exterior R _{se} :	0.04	m ² K/W

Total thickness [cm]: **57.3**

U-value [W/(m²K)]: **0.310**

8. Description of the window sections

Typical double glazed windows



Description of Window (Frame Construction, Manufacturer Make of Window (Frame; Product Name)

Eigenkonstruktion

LogikHaus 68 Al-pine/meranti/larch

Frame U-Value Uf

1.31 W/(m²K)

Type of Glazing

PressGlass Silverstar 4/18Ar/*4 4/4 (26)

Glass U-Value Ug

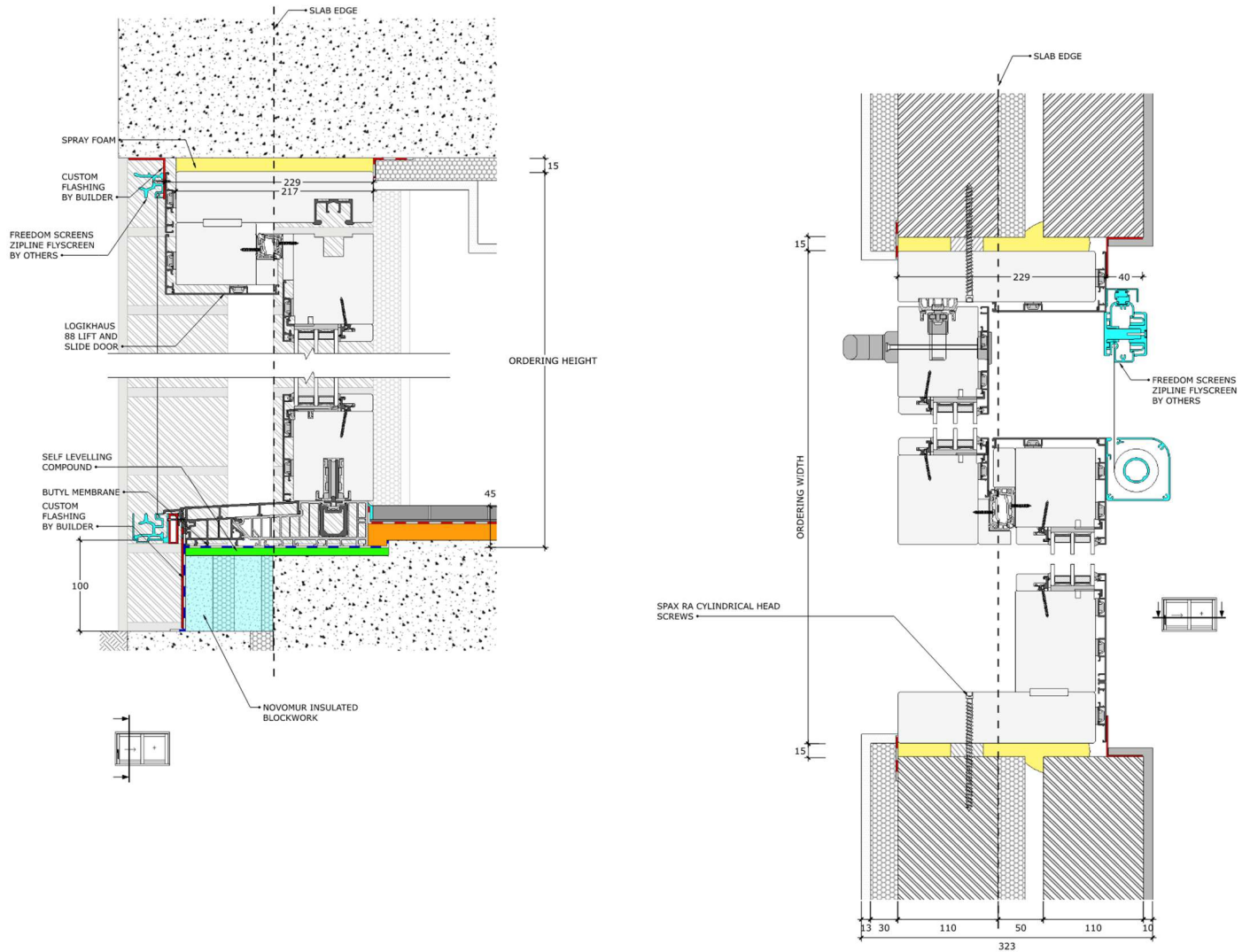
1.14 W/(m²K)

g-Value of Glazing

0.64



Typical sliding windows



Description of Window (Frame Construction, Manufacturer Make of Window (Frame; Product Name)	LogikHaus LogikHaus 88 Al-pine/meranti/larch LIFT AND SLIDE DOORS
Frame U-Value Uf	1.24 W/(m ² K)
Type of Glazing	PressGlass Silverstar 6*/18Ar/6/18Ar/*6 6/6/6 (54)
Glass U-Value Ug	0.53 W/(m ² K)
g-Value of Glazing	0.51



9. Description of the airtight envelope

The Blower test was carried out by Andrew Champness from Aerotight after completion of sheeting.

Unit A

Results	
Air flow at 50 Pa, Q_{50} [m ³ /h]	397.6
Air changes, n_{50}	0.49
Equivalent leakage area at 50 Pa [cm ²]	65.95
Permeability at 50 Pa [m ³ /h/m ²]	N/A

Unit B

Results	
Air flow at 50 Pa, Q_{50} [m ³ /h]	422.45
Air changes, n_{50}	0.52
Equivalent leakage area at 50 Pa [cm ²]	105.2
Permeability at 50 Pa [m ³ /h/m ²]	N/A

The airtight layer is the same throughout the whole building.

Two layers of **Aerosana Visconn** was sprayed to the internal brickwork wall, overlapped to the concrete ceiling and concrete floor.



All penetrations and remaining air leaks were sealed using **ORCON CLASSIC**.



10. Description of the planning of the ventilation ductwork

Each unit has a centralised heat recovery ventilation (HRV) system to service their area.

- A Passive House certified Stiebel Eltron LWZ 280 system has been installed using standard rigid and semi rigid ducting throughout
- The HRV units are located in the laundries of unit A & B.
- Each occupiable room also contains at least one operable window for additional ventilation if required.



Make of Ventilation System	Stiebel Eltron LWZ 280
Effective Heat Supply Efficiency	84 %
Electrical Efficiency	0,27 Wh/m ³

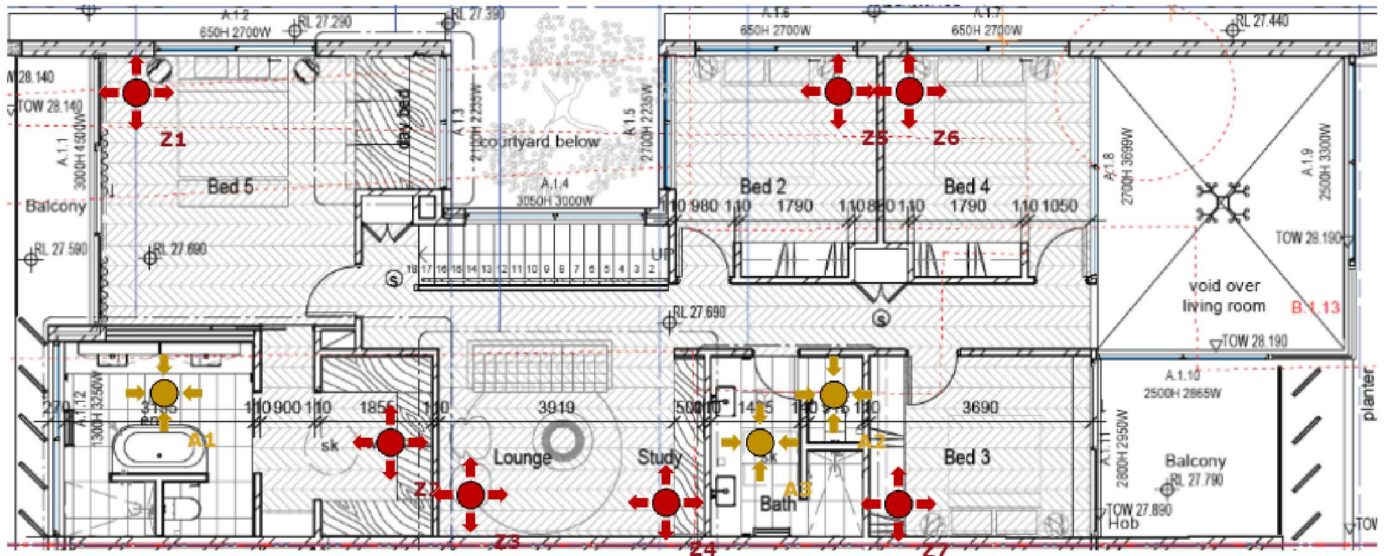
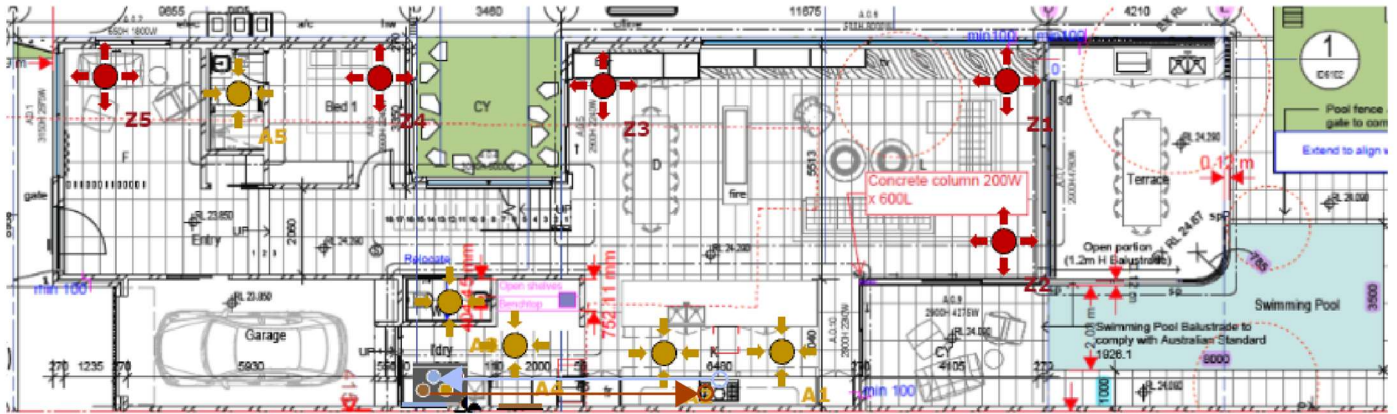
11. Description of the planning for the central unit

Supply air rooms are all main living spaces (shown in red): bedroom, dining room, and living room.

Exhaust air rooms are all bathrooms, toilets, and the kitchen (shown in yellow).

Supply and Extract of the MVHR are located on the roof

The layout below correspond to unit A, unit B being a mirrored version of it.



12. Description of the heat supply system

Each unit has a centralised domestic instant hot water system to service their area.

A Rinnai Enviro 32L Gas instant hot water system provides all domestic hot water.

13. Description of heating and cooling

Each unit has a Daikin 24W VRV split system providing cooling and heating.

A fireplace ESCEA DS1400 has also been installed. Fireplaces have a limited use case in the current climate and has not been used during the 2024 winter season.

14. Overall construction costs

The construction cost of the project was AUD \$9,500/m² (€5,410/m²).


Initiated in 2020 and completed in 2024, the project experienced significant cost increases over this period, largely due to the difficulty of building throughout Covid and supply chain disruptions. Additionally, the use of premium finishes and high-end products also contributed to the overall expense.

14. PHPP-Ergebnisse

Passive House-Verification

10.6 EN

PHPP



Building:	Tennyson Point Passive House		
Street:	26 Kemp Street		
Postcode/City:	2111	Tennyson Point	
Province/Country:	NSW	AU-Australia	
Building type:	3-Double house		
Climate data set:	AU1011a-Sydney, Altitude corrected		
Climate zone:	5: Warm	Altitude of location:	25 m
Home owner / Client:	Qanvas Pty Ltd - Marko Giang		
Street:	26B Kemp Street		
Postcode/City:	2111	Tennyson Point	
Province/Country:	NSW	AU-Australia	
Building services:	Qanvas Pty Ltd - Marko Giang		
Street:	26B Kemp Street		
Postcode/City:	2111	Tennyson Point	
Province/Country:	NSW	AU-Australia	
Certification:	HIP V. HYPE		
Street:	293 Barkly Street		
Postcode/City:	3056	Brunswick	
Province/Country:	Victoria	AU-Australia	

Architecture:	EMK Architects Pty Ltd		
Street:	18 Dunkerley Place		
Postcode/City:	2017	Waterloo	
Province/Country:	NSW	AU-Australia	
Energy consultancy:	Qanvas Pty Ltd - Marko Giang		
Street:	26B Kemp Street		
Postcode/City:	2111	Tennyson Point	
Province/Country:	NSW	AU-Australia	

Year of construction:	2024	Interior temperature winter [°C]:	20.0	Interior temp. summer [°C]:	25.0
No. of dwelling units:	2	Internal heat gains (IHG) winter [W/m²]:	2.3	IHG summer [W/m²]:	2.3
No. of occupants:	6.3	Specific heat capacity [WhK per m² TFA]:	204	Mechanical cooling:	x

Specific building characteristics with reference to the treated floor area		Criteria	Alternative criteria	Fullfilled? ²
Space heating	Treated floor area m²	504.4		
	Heating demand kWh/(m²a)	12	≤ 15	Yes
	Heating load W/m²	13	≤ -	
Space cooling	Cooling & dehum. demand kWh/(m²a)	12	≤ 18	Yes
	Frequency of overheating (> 25 °C) %	-	≤ -	-
	Frequency of excessively high humidity (> 12 g/kg) %	10	≤ 10	Yes
Airtightness	Pressurisation test result n ₅₀ 1/h	0.5	≤ 0.6	Yes
Non-renewable Primary Energy (PE)	PE demand kWh/(m²a)	110	≤ -	-
Primary Energy Renewable (PER)	PER demand kWh/(m²a)	57	≤ 45	Yes
	Renew. energy generation (in rel. to projected building footprint area) kWh/(m²a)	76	≥ 60	

² Empty field: data missing; -: No requirement

I confirm that the values given here have been determined following the PHPP methodology and based on the characteristic values of the building. The PHPP calculations are attached to this verification.

Task: _____ First name: Marcus Surname: Strang

Certificate-ID: 48747-48748_HVH_PH_20250602_MAS Issued on: 03/06/25 City: Melbourne

Passive House Plus? Yes

Signature: 